



New Jersey's Technology Cluster

Prepared
Winter 2012–2013



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Produced by the
Office of Labor Planning and Analysis
of the
New Jersey Department of Labor and Workforce Development



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Technology Industry Cluster: Employment Analysis

Traditional Labor Market
Information View



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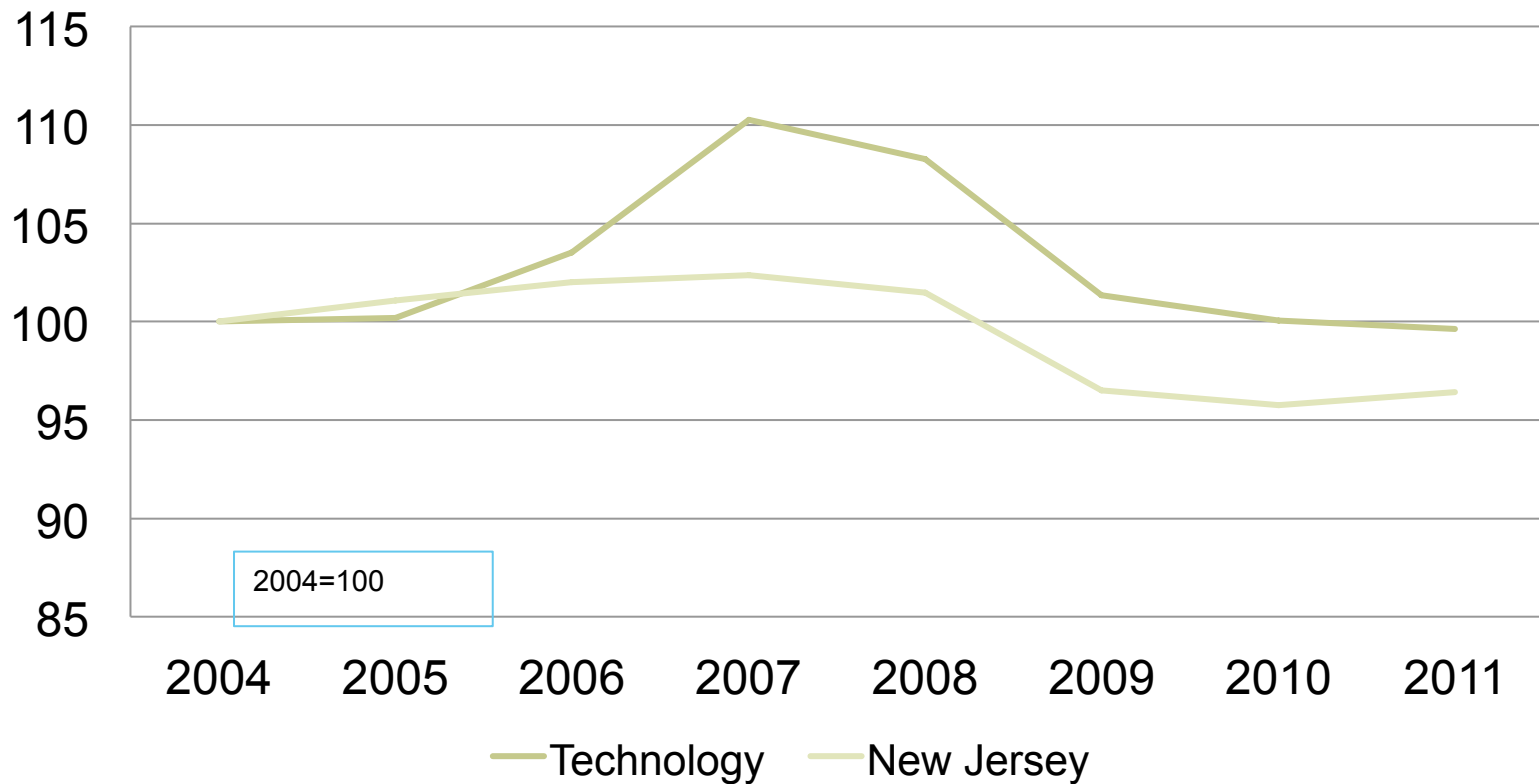
Employment Overview

- In 2011 New Jersey's technology cluster accounted for 311,869 jobs, or about 10 percent of the statewide total.
- The annual average wage for the technology cluster was \$103,215 in 2011, or 181 percent of the statewide average (\$56,888) for all industries.
- Industries within the technology cluster can primarily be found within four industry sectors:
 - Utilities
 - Manufacturing
 - Information
 - Professional, scientific and technical service
- Employment in the cluster peaked in 2007 at 345,108 jobs.
- Note: Technology Cluster Industries were selected primarily based on an U.S. Bureau of Labor Statistics (BLS) study that defined an industry as high tech based on its high proportion of scientists, engineers and technicians.



Technology sector employment since 2007 has generally followed the statewide trend. Technology employment is currently slightly below 2004 levels (-1,157 jobs), while statewide employment has declined by 3.6 percent.

Technology Sector vs. Statewide Employment



Source: NJLWD, Quarterly Census of Employment & Wages

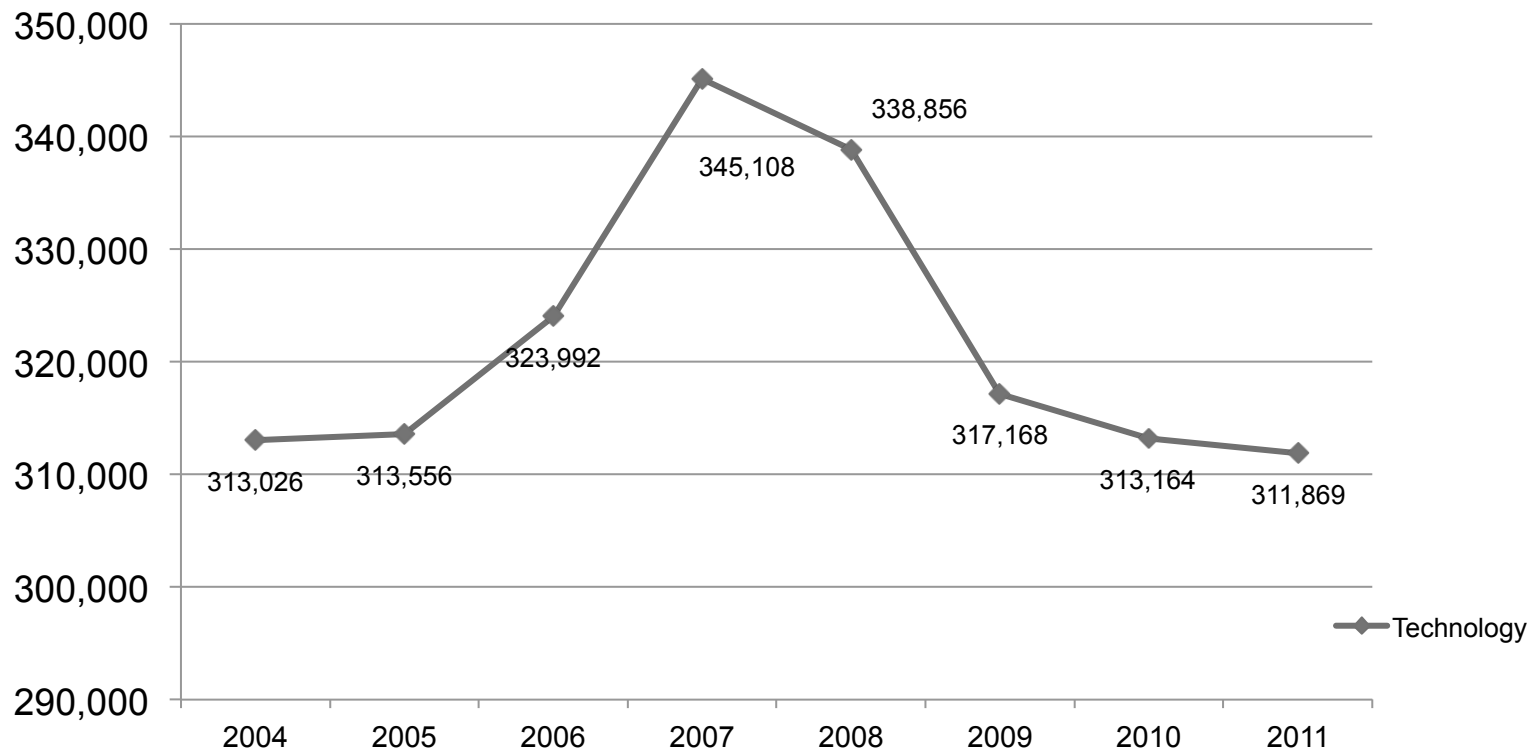


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Employment in the cluster declined by 9.6% since 2007.

**Technology Sector
Employment**



Source: NJLWD, Quarterly Census of Employment & Wages

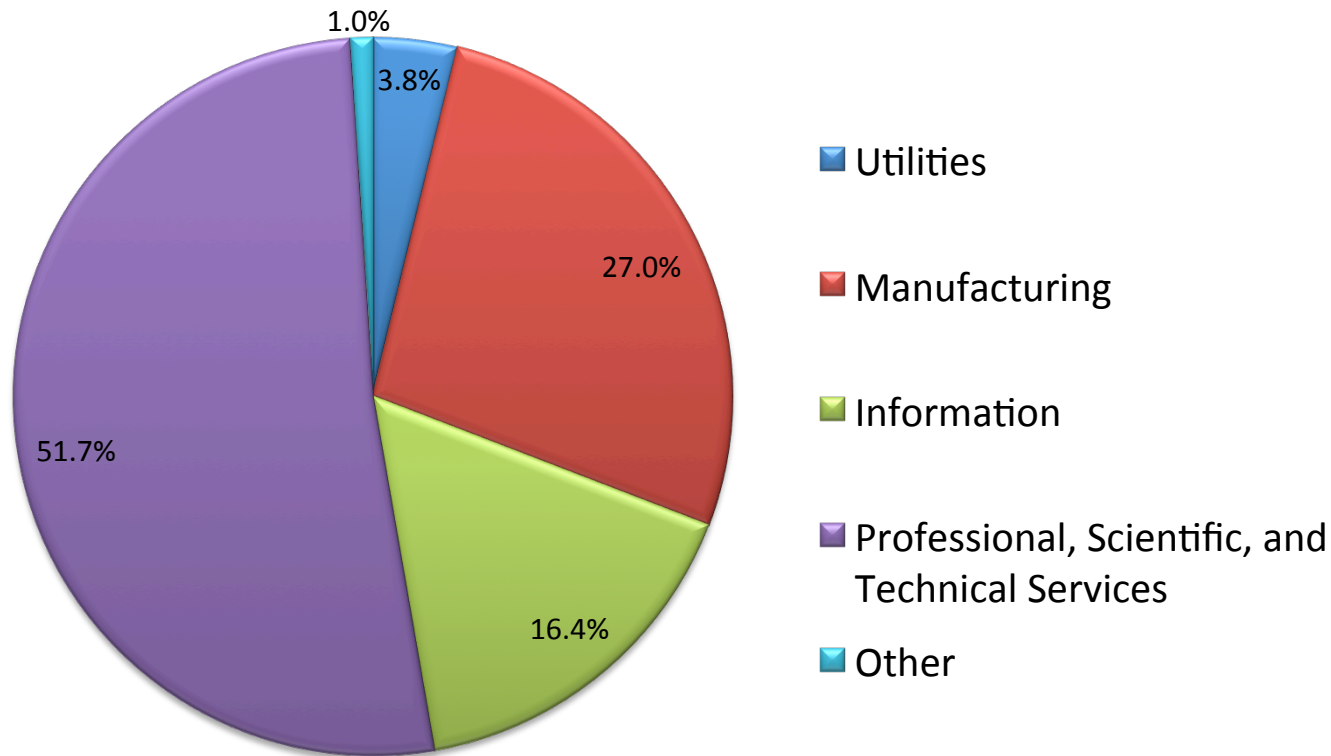


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Professional, scientific, and technical services industries accounted for more than half of cluster employment in 2011.

Percent Employment by Component Sector



Source: NJLWD, Quarterly Census of Employment & Wages, 2010 Annual Average



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Eighty percent of all business establishments in the technology cluster were in the professional, scientific and technical services sector.

Technology Cluster: Component Sectors, 2011 Annual Averages

		Employment	Wages	
<u>Industry</u>	<u>Establishments</u>	<u>Average</u>	<u>Average</u>	<u>Total</u>
All Industries	259,007	3,155,405	\$56,888	\$179,503,864,608
All Cluster Industries	25,590	311,869	\$103,215	\$32,189,409,988
Utilities	208	11,196	\$111,470	\$1,248,020,820
Manufacturing	1,800	82,059	\$109,222	\$8,962,675,202
Information	2,568	48,504	\$101,662	\$4,930,994,018
Professional, Scientific, and Technical Services	20,473	167,091	\$100,876	\$16,855,516,557

Source: NJLWD, Quarterly Census of Employment & Wages, 2011 Annual Averages



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Within the technology cluster over 82% of employment was found in only nine industries in 2011.

Technology Cluster: Component Sectors, 2011 Annual Averages

Industry	Establishments	Employment Average	Percent of Cluster Employment	Wages Average
All Industries	259,007	3,155,405		\$56,888
All Cluster Industries	25,590	311,869	100.0%	\$103,215
<u>Largest Ranked by Employment</u>				
Computer systems design and related services	8,757	63,666	20.4%	\$100,957
Management and technical consulting services	7,297	37,230	11.9%	\$85,412
Architectural and engineering services	3,697	35,518	11.4%	\$86,153
Scientific research and development services	722	30,677	9.8%	\$136,517
Pharmaceutical and medicine manufacturing	245	29,995	9.6%	\$145,460
Wired telecommunications carriers	772	25,887	8.3%	\$103,979
Electronic instrument manufacturing	331	13,777	4.4%	\$92,228
Medical equipment and supplies manufacturing	431	12,342	4.0%	\$97,191
Semiconductor and electronic component mfg.	205	8,033	2.6%	\$67,816
<u>Smallest Ranked by Employment</u>				
Industrial machinery manufacturing	149	2,832	0.9%	\$68,468
Other telecommunications	340	2,547	0.8%	\$94,848
Wireless telecommunications carriers	256	2,523	0.8%	\$75,937
Other electrical equipment and component mfg.	85	2,314	0.7%	\$64,406
Aerospace product and parts manufacturing	28	1,558	0.5%	\$71,319
Computer and peripheral equipment mfg.	54	636	0.2%	\$94,000
Magnetic media manufacturing and reproducing	28	595	0.2%	\$59,863
Satellite telecommunications	22	206	0.1%	\$83,318

Source: NJLWD, Quarterly Census of Employment & Wages, 2011 Annual Averages

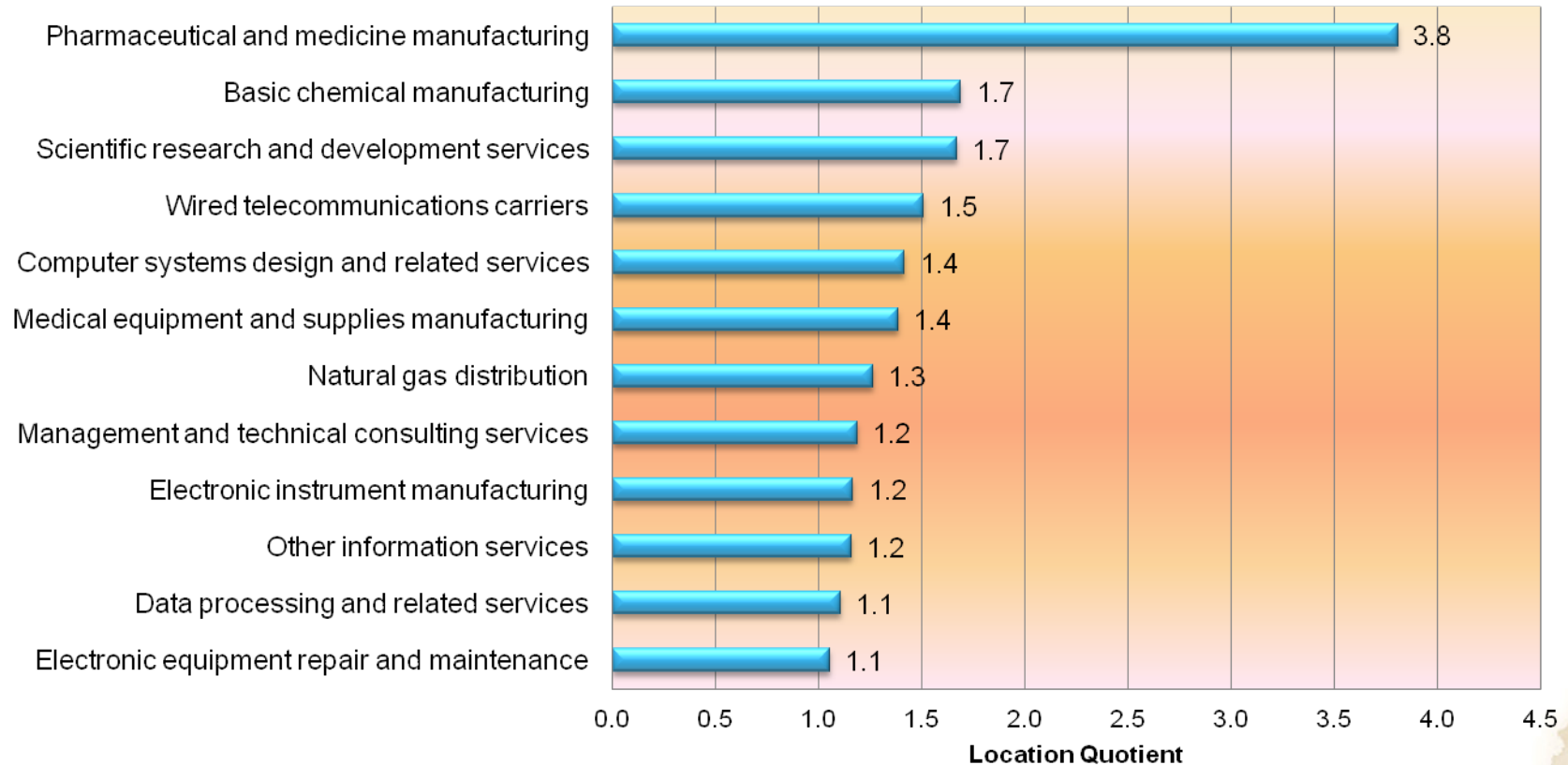


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New Jersey's technology sector employment share in several key industries was greater than the nation in 2011.

2011 Location Quotient's of Selected Technology Cluster Industries

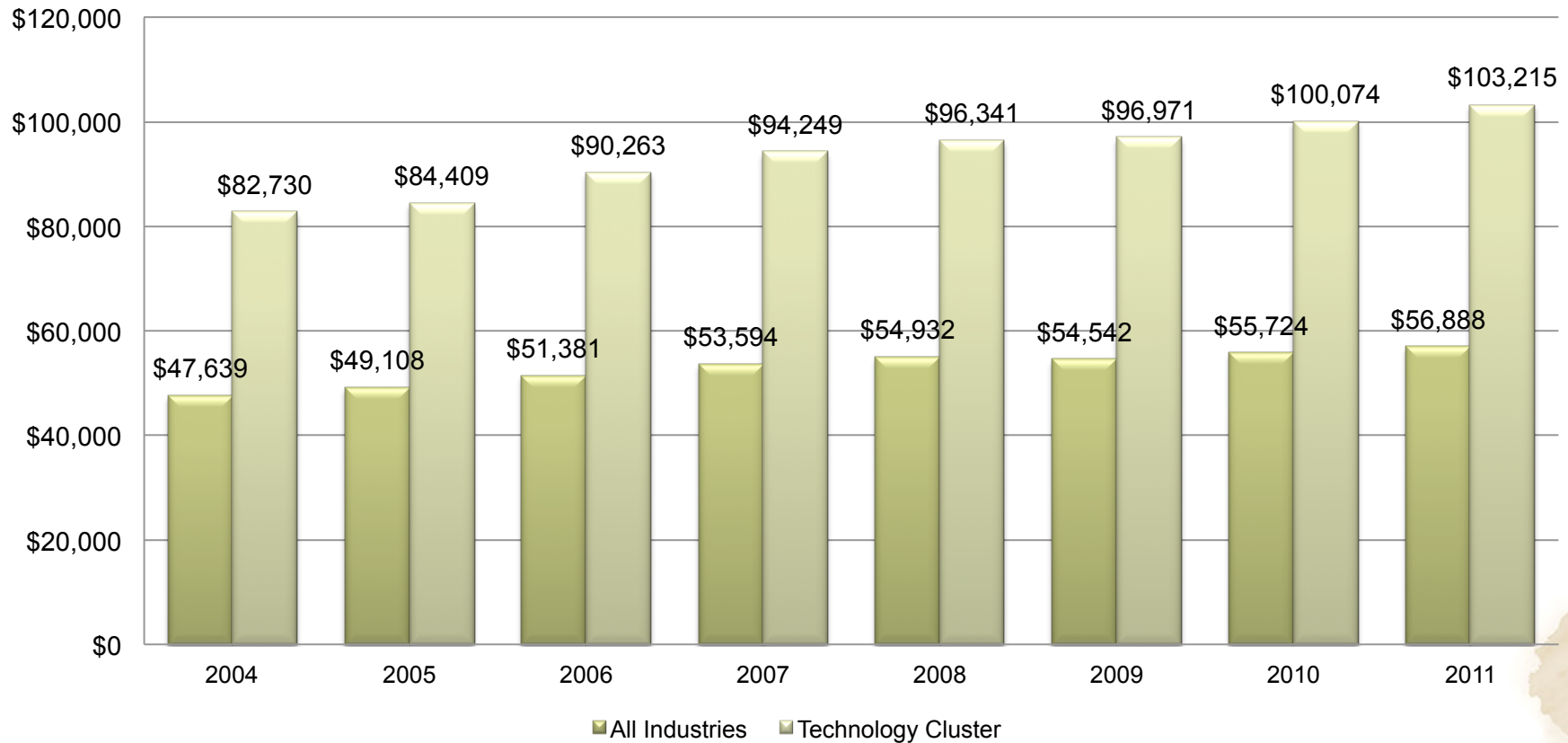


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Wages in the technology cluster have averaged 176% of the statewide annual average wage since 2004.

2011 Annual Average Wage: All Industries vs. Technology Cluster



Source: NJLWD, Quarterly Census of Employment & Wages, Annual Averages



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Employment in computer systems design and related services was 20 percent of total technology cluster employment.

Technology Cluster: Professional, Scientific, and Technical Services Sector, 2011 Annual Averages

Industry	Establishments	Employment	Wages	
		Average	Average	Total
All Cluster Industries	25,590	311,869	\$103,215	\$32,189,409,988
Professional, Scientific, and Technical Services	20,473	167,091	\$100,876	\$16,855,516,557
Architectural and engineering services	3,697	35,518	\$86,153	\$3,060,005,376
Computer systems design and related services	8,757	63,666	\$100,957	\$6,427,575,655
Management and technical consulting services	7,297	37,230	\$85,412	\$3,179,934,260
Scientific research and development services	722	30,677	\$136,517	\$4,188,001,266

Source: NJLWD, Quarterly Census of Employment & Wages, 2011 Annual Averages



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Pharmaceutical and medicine manufacturing (36.5%) led the manufacturing component in employment in 2011.

Technology Cluster: Manufacturing Sector, 2011 Annual Averages

<u>Industry</u>	<u>Establishments</u>	<u>Employment</u>	<u>Wages</u>	
		<u>Average</u>	<u>Average</u>	<u>Total</u>
All Cluster Industries	25,590	311,869	\$103,215	\$32,189,409,988
Manufacturing	1,800	82,059	\$109,222	\$8,962,675,202
Basic chemical manufacturing	128	7,036	\$104,201	\$733,200,275
Pharmaceutical and medicine manufacturing	245	29,995	\$145,460	\$4,363,125,163
Industrial machinery manufacturing	149	2,832	\$68,468	\$193,907,692
Computer and peripheral equipment mfg.	54	636	\$94,000	\$59,815,423
Communications equipment manufacturing	116	2,941	\$102,680	\$302,006,906
Semiconductor and electronic component mfg.	205	8,033	\$67,816	\$544,747,202
Electronic instrument manufacturing	331	13,777	\$92,228	\$1,270,613,718
Magnetic media manufacturing and reproducing	28	595	\$59,863	\$35,618,329
Other electrical equipment and component mfg.	85	2,314	\$64,406	\$149,002,983
Aerospace product and parts manufacturing	28	1,558	\$71,319	\$111,126,403
Medical equipment and supplies manufacturing	431	12,342	\$97,191	\$1,199,511,108

Source: NJLWD, Quarterly Census of Employment & Wages, 2011 Annual Averages



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Wages in the information component was 98.5% of the technology cluster average.

Technology Cluster: Information Sector, 2011 Annual Averages

Industry	Establishments	Employment	Wages	
		Average	Average	Total
All Cluster Industries	25,590	311,869	\$103,215	\$32,189,409,988
Information	2,568	48,504	\$101,662	\$4,930,994,018
Software publishers	310	4197	\$121,035	\$508,012,743
Wired telecommunications carriers	772	25887	\$103,979	\$2,691,702,168
Wireless telecommunications carriers	256	2523	\$75,937	\$191,564,948
Satellite telecommunications	22	206	\$83,318	\$17,198,270
Other telecommunications	340	2547	\$94,848	\$241,555,388
Data processing and related services	523	7898	\$101,542	\$801,998,223
Other information services	345	5246	\$91,293	\$478,962,278
Source: NJLWD, Quarterly Census of Employment & Wages, 2011 Annual Averages				



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Technology Industry Cluster: Occupational Analysis

Traditional Labor Market
Information View



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Occupational Overview

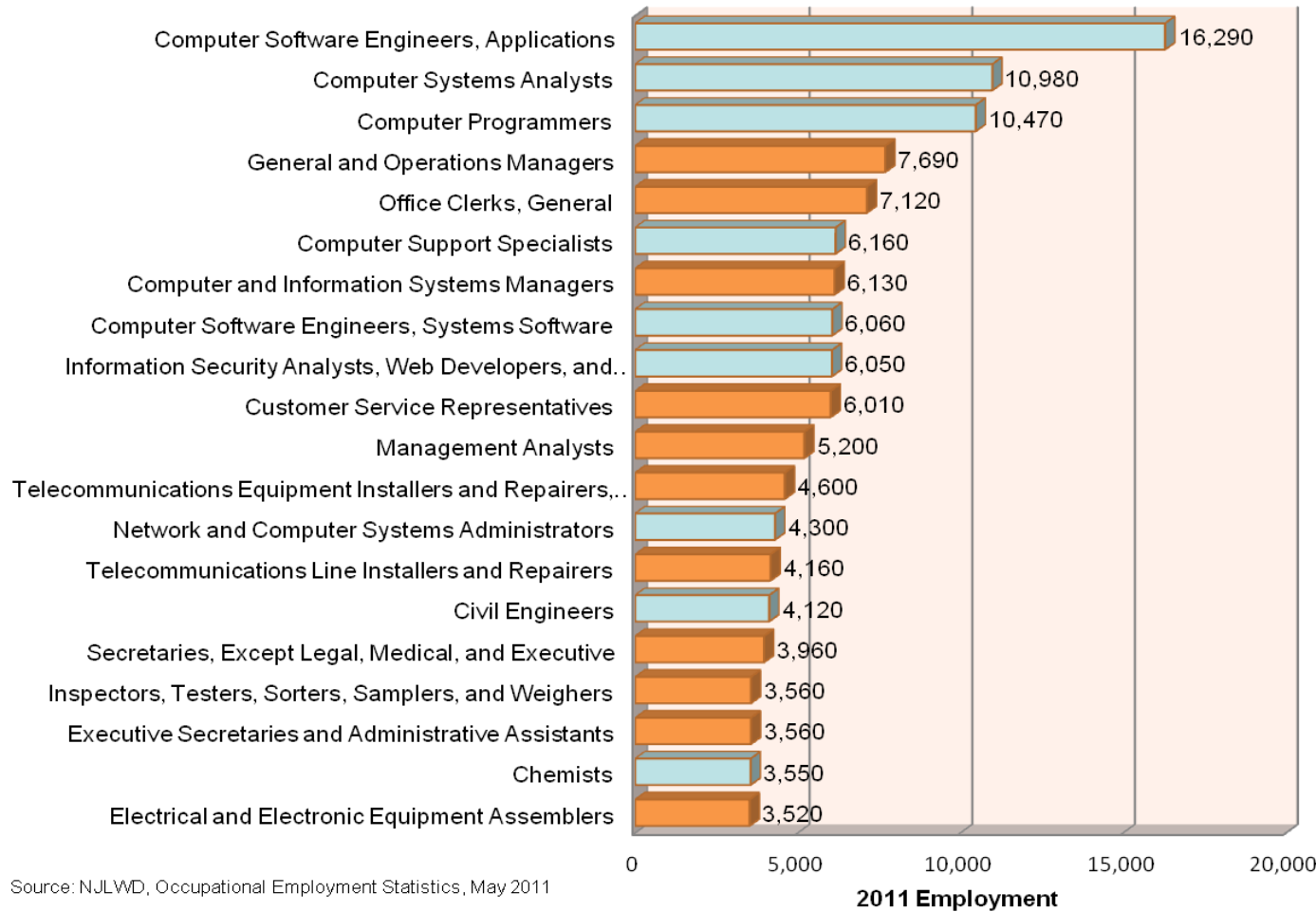
- The technology cluster overall consists of 313 different occupations. (Occupational Employment Statistics, May 2011)
- Cluster occupations had an estimated employment of 311,280 statewide in 2011, or about 8.3% percent of the statewide total occupational employment.
- Science, Technology, Engineering & Mathematics (STEM) occupations within the technology industry cluster accounted for 3.1 percent of the statewide total occupational employment (2011).
- However, STEM occupations were responsible for 117,490 jobs, or 37.7% of the employment within the technology industry cluster (2011).



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Top 20 technology cluster occupations accounted for 39.7% of total cluster occupational employment in 2011.



Nine of the top 20 occupations are technology oriented and make up 22 percent of total cluster employment.



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Science, technology, engineering and mathematical (STEM) occupations accounted for 38% of cluster occupational employment in 2011.

Technology Industry Cluster: Top Occupational Groups			
Occupational Group	2011 Employment	Percent of Total Employment	2011 Average Salary
Total all occupations	311,280	100.0%	\$77,012
Computer and Mathematical Occupations	67,380	21.6%	\$87,453
Office and Administrative Support Occupations	41,270	13.3%	\$41,174
Management Occupations	35,420	11.4%	\$148,183
Production Occupations	33,060	10.6%	\$41,574
Architecture and Engineering Occupations	32,280	10.4%	\$81,786
Business and Financial Operations Occupations	30,200	9.7%	\$77,126
Installation, Maintenance, and Repair Occupations	20,360	6.5%	\$61,135
Life, Physical, and Social Science Occupations	17,820	5.7%	\$74,189
Sales and Related Occupations	17,580	5.6%	\$78,174
Transportation and Material Moving Occupations	4,150	1.3%	\$36,200
Science, Technology, Engineering, Mathematical Occupations	117,480	37.7%	\$83,884

Source: NJLWD, Occupational Employment Statistics, May 2011

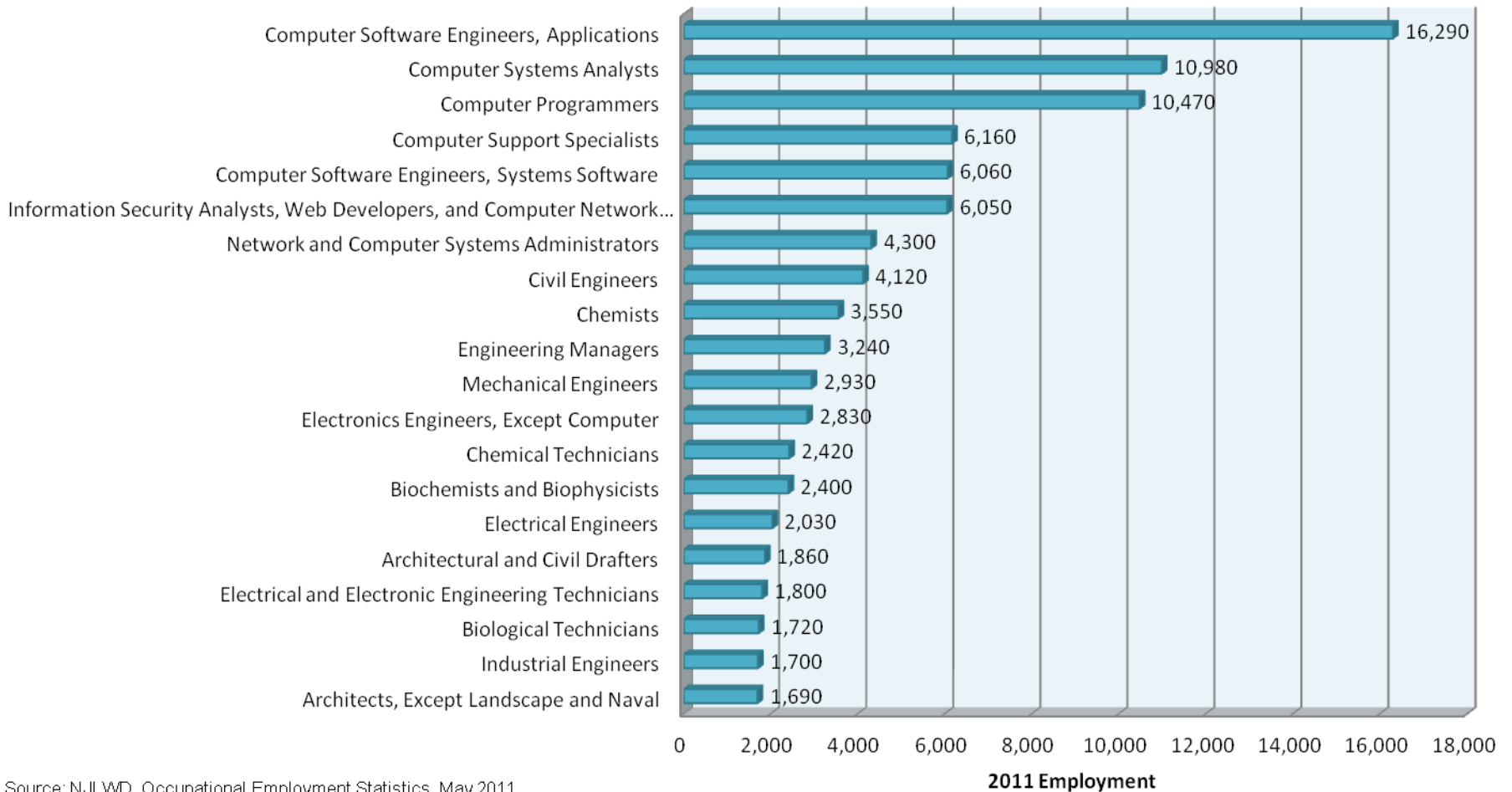


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Most of the top STEM occupations are related to computers.

Employment by occupation for the largest STEM occupations

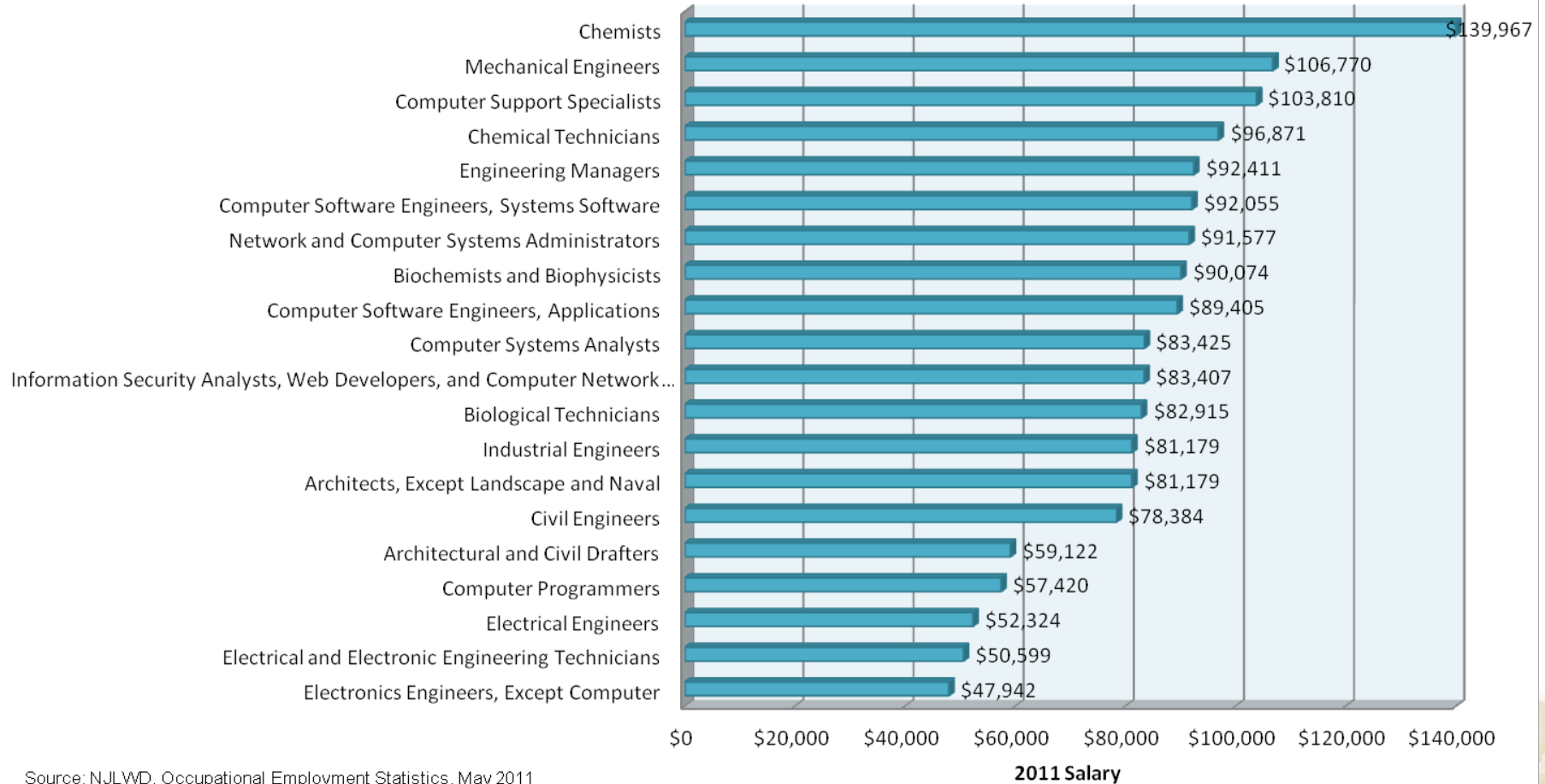


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Chemists had the highest average annual salary (\$139,967) in 2011.

Average Annual Salary for the largest STEM occupations



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Technology cluster industries ranked by 2011 average annual salary

NAICS4	Description	2011 Employment	2011 Salary	Rank
5417	Scientific Research and Development Services	30,860	\$93,880	1
5415	Computer Systems Design and Related Services	63,250	\$88,500	2
5112	Software Publishers	4,090	\$87,700	3
5172	Wireless Telecommunications Carriers (except Satellite)	2,720	\$84,370	4
5179	Other Telecommunications	2,630	\$83,550	5
5182	Data Processing, Hosting, and Related Services	7,790	\$82,840	6
2211	Electric Power Generation, Transmission and Distribution	6,670	\$77,950	7
3342	Communications Equipment Manufacturing	2,850	\$77,490	8
5171	Wired Telecommunications Carriers	26,760	\$77,460	9
5413	Architectural, Engineering, and Related Services	36,240	\$75,770	10
5416	Management, Scientific, and Technical Consulting Services	37,320	\$74,110	11
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	14,170	\$72,860	12
3341	Computer and Peripheral Equipment Manufacturing	690	\$69,960	13
2212	Natural Gas Distribution	5,090	\$68,720	14
5191	Other Information Services	5,230	\$67,580	15
3254	Pharmaceutical and Medicine Manufacturing	27,510	\$63,030	16
3364	Aerospace Product and Parts Manufacturing	1,290	\$61,190	17
3391	Medical Equipment and Supplies Manufacturing	12,040	\$57,460	18
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	1,060	\$57,220	19
3332	Industrial Machinery Manufacturing	2,630	\$55,230	20
3344	Semiconductor and Other Electronic Component Manufacturing	7,960	\$53,350	21
8112	Electronic and Precision Equipment Repair and Maintenance	3,090	\$52,340	22
3359	Other Electrical Equipment and Component Manufacturing	2,310	\$49,310	23

Source: NJLWD, Occupational Employment Statistics, May 2011



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Technology Industry Cluster:

Occupational Analysis for Selected Industries

Traditional Labor Market
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The average salary in computer systems design and related services is 115% of the technology cluster average.

Computer Systems Design and Related Services: Top Occupations		
Occupational Title	2011 Employment	2011 Average Salary
Total all Cluster Occupations	311,280	\$77,012
Total all industry occupations	63,250	\$88,500
Computer Software Engineers, Applications	10,190	\$95,810
Computer Programmers	7,760	\$82,010
Computer Systems Analysts	7,560	\$88,880
Computer Support Specialists	3,180	\$56,270
Sales Representatives, Services, All Other	3,180	\$74,000
Computer and Information Systems Managers	3,090	\$155,640
Computer Software Engineers, Systems Software	3,010	\$103,440
Computer Occupations, All Other*	2,840	\$74,150
General and Operations Managers	1,920	\$166,870
Information Security Analysts, Web Developers, and Computer Network Architects	1,890	\$94,480
Office Clerks, General	1,580	\$29,180
Network and Computer Systems Administrators	1,410	\$78,230
Database Administrators	900	\$82,320

Source: NJLWD, Occupational Employment Statistics, May 2011

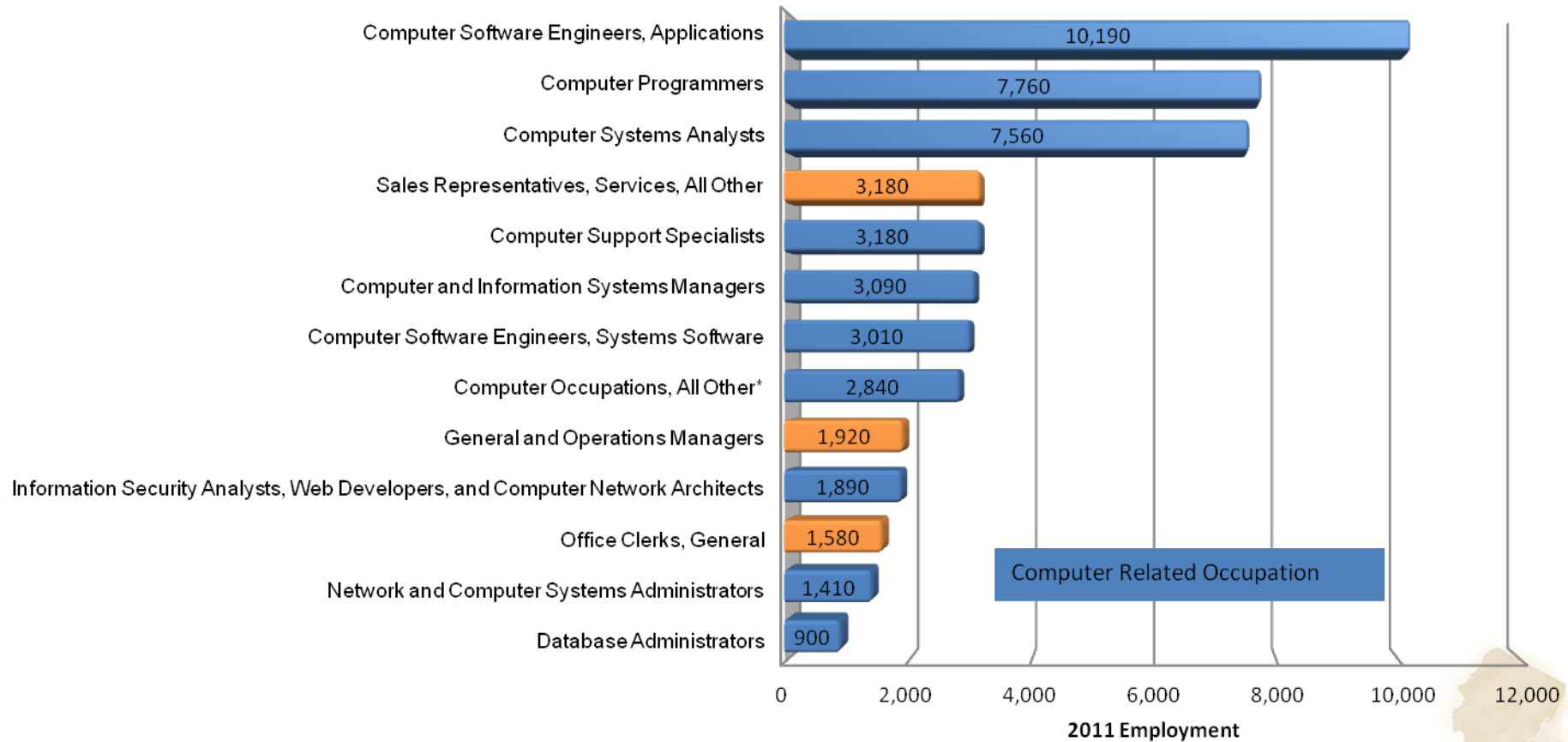


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The top 10 occupations in computer systems design and related services make up 70% of total industry employment.

Largest Occupations in the Computer Systems and Design and Related Services Industry



Source, NJLWD, Occupational Employment Statistics, May 2011



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Occupational employment in the pharmaceutical and medicine manufacturing industry was about 9% of the cluster total.

Pharmaceutical & Medicine Manufacturing: Top Occupations		
Occupational Title	2011 Employment	2011 Average Salary
Total all Cluster Occupations	311,280	\$77,012
Total all occupations	27,510	\$63,030
Packaging and Filling Machine Operators and Tenders	3,170	\$28,370
Chemists	1,680	\$75,040
Mixing and Blending Machine Setters, Operators, and Tenders	1,270	\$37,790
Inspectors, Testers, Sorters, Samplers, and Weighers	1,270	\$39,780
First-Line Supervisors/Managers of Production and Operating Workers	1,040	\$62,820
Chemical Equipment Operators and Tenders	1,010	\$39,830
Laborers and Freight, Stock, and Material Movers, Hand	870	\$31,900
Chemical Technicians	620	\$45,840
Industrial Machinery Mechanics	580	\$56,580
Biochemists and Biophysicists	550	\$92,910
Industrial Production Managers	500	\$131,410
Natural Sciences Managers	450	\$163,730
Industrial Engineers	440	\$80,070

Source: NJLWD, Occupational Employment Statistics, May 2011

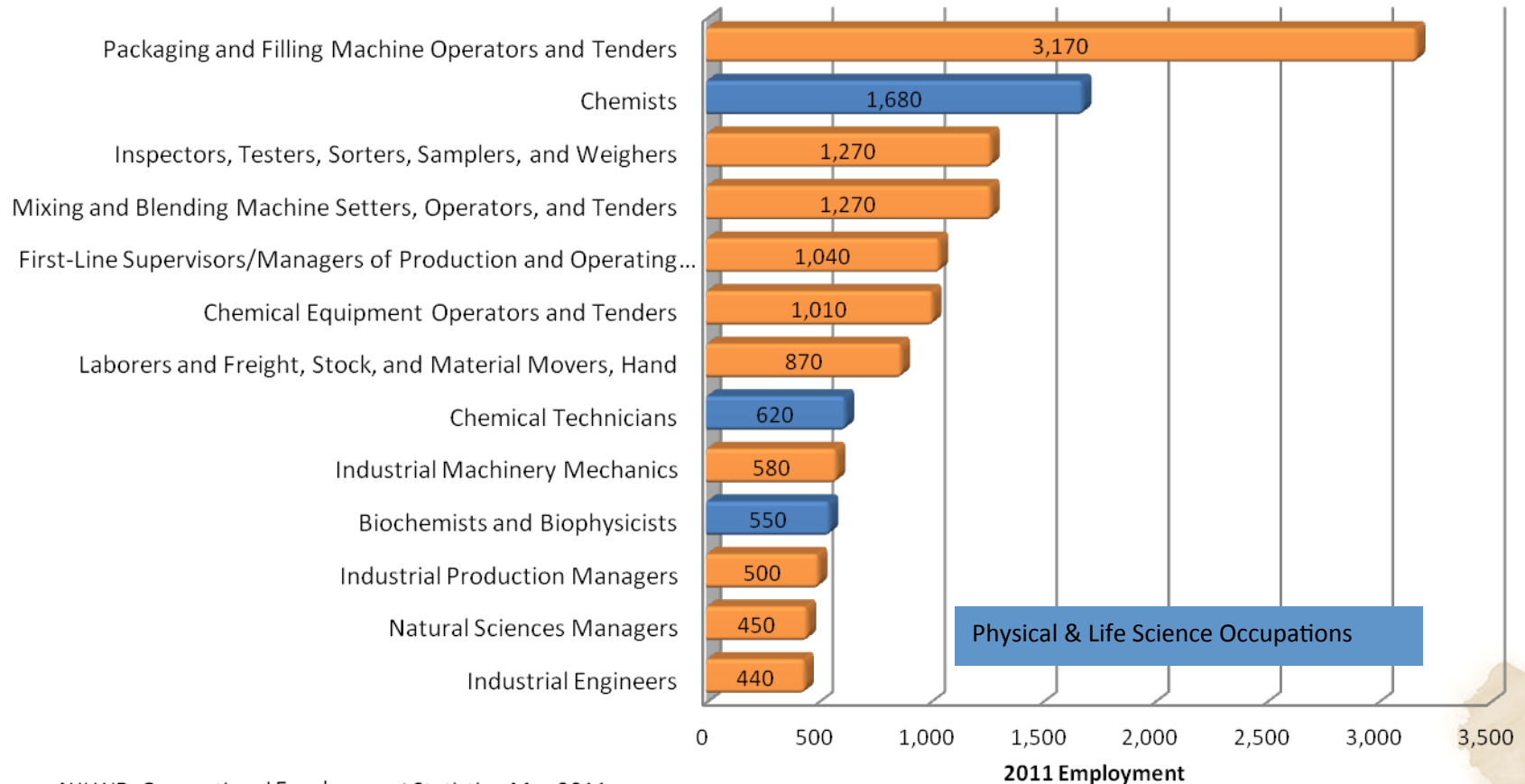


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Chemists had the second largest occupational employment within the pharmaceutical and medicine manufacturing industry (2011).

Largest Occupations, Pharmaceutical & Medicine Manufacturing Industry



Source: NJLWD, Occupational Employment Statistics, May 2011



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Civil engineers were responsible for 11% of the occupational employment in the architectural, engineering and related services industry.

Architectural, Engineering and Related Services: Top Occupations		
Occupational Title	2011 Employment	2011 Average Salary
Total all Cluster Occupations	311,280	\$77,012
Total all occupations	36,240	\$75,770
Civil Engineers	3,980	\$91,900
Architectural and Civil Drafters	1,830	\$52,260
Architects, Except Landscape and Naval	1,680	\$81,160
Engineering Managers	1,510	\$136,270
Mechanical Engineers	1,450	\$94,950
General and Operations Managers	1,270	\$169,890
Office Clerks, General	1,220	\$36,280
Civil Engineering Technicians	1,050	\$47,370
Secretaries, Except Legal, Medical, and Executive	870	\$40,250
Surveyors	820	\$62,740
Business Operations Specialists, All Other	790	\$63,450
Managers, All Other	730	\$104,650
Environmental Engineers	730	\$82,720

Source: NJLWD, Occupational Employment Statistics, May 2011

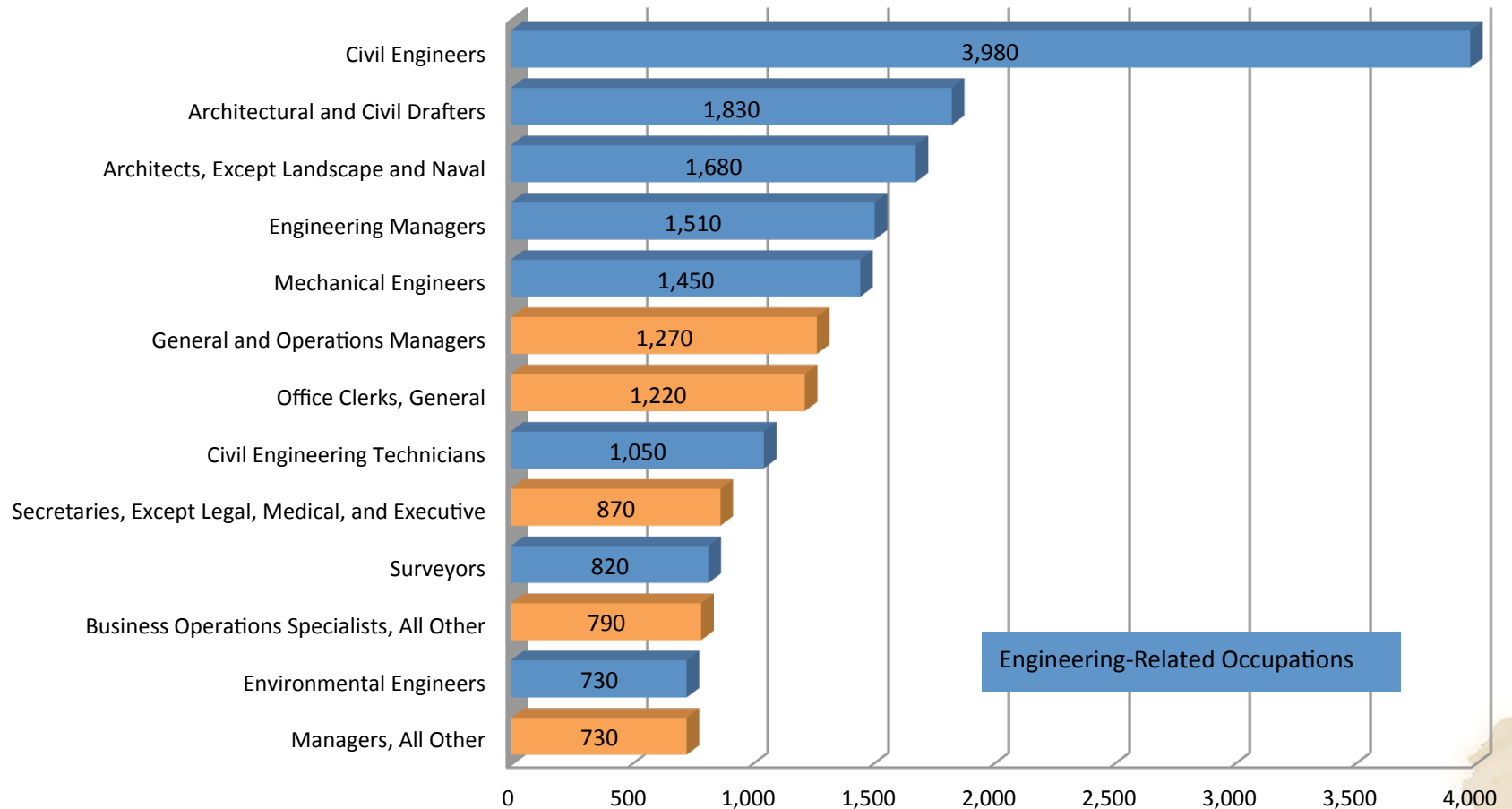


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The top occupations made up almost 50% of the employment in the architectural, engineering and related services industry.

Largest Occupations in Architectural, Engineering & Related Services



Source: NJLWD, Occupational Employment Statistics, May 2011



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Management, sales and support occupations are dominant in the management, scientific and technical consulting services industry.

Management, Scientific, and Technical Consulting Services: Top Occupations		
Occupational Title	2011 Employment	2011 Average Salary
Total all Cluster Occupations	311,280	\$77,012
Total all occupations	37,320	\$74,110
Management Analysts	3,230	\$93,460
Customer Service Representatives	2,110	\$35,940
Office Clerks, General	1,930	\$31,950
General and Operations Managers	1,870	\$171,600
Computer Software Engineers, Applications	1,590	\$99,320
Sales Representatives, Services, All Other	1,430	\$80,340
Market Research Analysts	1,370	\$72,820
Stock Clerks and Order Fillers	1,340	\$28,070
Business Operations Specialists, All Other	1,320	\$74,890
Bookkeeping, Accounting, and Auditing Clerks	1,090	\$40,030
Secretaries, Except Legal, Medical, and Executive	1,030	\$37,670
Human resources, labor relations, and training specialists, all other	970	\$69,010
First-Line Supervisors/Managers of Office and Administrative Support Workers	800	\$57,080

Source: NJLWD, Occupational Employment Statistics, May 2011



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Largest Occupations in Management, Scientific, and Technical Consulting Services Industry



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Technology Industry Cluster: Occupational Projections and Outlook

Traditional Labor Market
Information View



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STEM occupations are projected to grow at a faster rate than non-STEM occupations.

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Estimated and Projected Employment by STEM and Non STEM Occupations: 2010-2020

Occupational Title	Employment				Average Annual		
	Actual 2010	Projected 2020	Change 2010-2020		Job Openings		
			Number	Percent	Total	Growth	Replacement
Total, All Occupations	4,155,700	4,476,000	320,300	7.7	132,940	35,070	97,870
STEM Occupations	250,000	276,700	26,700	10.7	7,870	2,730	5,140
Non-STEM Occupations	3,905,700	4,199,300	293,600	7.5	125,070	32,340	92,730
STEM Management	25,100	27,600	2,500	10.0	810	250	560
Computer and Math occupations	139,500	157,100	17,600	12.6	4,320	1,790	2,530
Engineering and Surveying occupations	55,300	58,900	3,600	6.5	1,670	370	1,300
Physical and Life Sciences occupations	30,100	33,100	3,000	10.0	1,070	320	750

Source: NJLWD Current Employment Statistics, Occupational Employment Statistics



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Technology Outlook

As technology-based industries and occupations continue to evolve, New Jersey will remain in a strong position nationally. The state's highly educated workforce is well documented and it includes nearly 240,000 New Jersey residents in science, technology, engineering and mathematics occupations.

(U.S. Census Bureau, 2010 American Community Survey)

The state's nationally recognized universities such as Stevens Institute of Technology, New Jersey Institute of Technology, and Rutgers – The State University of New Jersey continue to supply qualified applicants to the industry.

In addition, the many current and future technological advances statewide in key industry sectors, including health care, finance and pharmaceuticals — particularly in the growing biotech component — all provide continued opportunities for stability and growth in the industry and for a positive outlook in the state.



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New Jersey Department of Labor and Workforce Development

Office of Labor Planning & Analysis

http://lwd.dol.state.nj.us/labor/lpa/LMI_index.html

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